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ABSTRACT

Results of a study to determine the impact of transition from elementary to junior high school on students' self-esteem are reported. The study, conducted from 1974 to 1976, followed 798 students from 18 elementary schools in Milwaukee from grade 6 to grade 7. The students represented K-8 schools which involved no change of school and K-6 schools, both predominately white, and K-6 predominately black schools. Students were interviewed privately to determine their degree of self-esteem and vulnerability. They responded to questions concerning their perception of their looks, their school performance, and peer and teacher attitudes about them. Results indicated that in terms of self-esteem, white adolescent girls who have entered the new environment of junior high school appear to be at a disadvantage in comparison to boys in general and to girls who do not have to change schools in the 7th grade. Also, the child who has been vulnerable prior to the change is less capable of making the transition without damage to self-esteem. The girl who has to make a radical environmental change from an elementary into a junior high school and who has not succeeded the year before is the child most at risk. (Author/KC)

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THE IMPACT OF SCHOOL STRUCTURE ON THE SELF-ESTEEM OF VULNERABLE ADOLESCENTS

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INTRODUCTION

A central question for the social scientist is whether environmental setting has any substantial impact upon the mental health of the individual. If we consider the level of self-esteem as a key dimension of mental health (Rosenberg, 1965; Murphy, 1947), the question arises whether this dimension is affected by environmental context. For the early adolescent, of course, the school serves as a key environmental context. Prior research has suggested that early adolescence is a particularly disturbing period for the child and that the level of disturbance in terms of the self-picture and degree of happiness is affected significantly by the type of school in which he is located (Simmons et al., 1973). As the youngster moves out of childhood into early adolescence he or she is confronted not only with the biological changes of puberty, but frequently also with a major alteration of school environment. The child shifts from a small elementary school where he has remained in one class with a stable set of peers and one teacher into a large junior high school where teachers, peers, and classrooms change many times during a day. The anonymity and impersonality of the new school type seem to present the seventh grade child with a significant challenge (Blyth et al., 1978) and a sharp environmental discontinuity (see Benedict, 1938). While boys do not appear to be affected by the transition into junior high, earlier publications of the present authors document the advantage for the early adolescent girl of remaining in the same school between sixth and seventh grade (Simmons et al., In Process; Blyth et al., 1978). That is, in a longitudinal study in Milwaukee, girls who were in a Kindergarten through eighth grade system (K-8), showed less of a drop in self-esteem in seventh grade than girls who had to move from a Kindergarten through sixth grade school (K-6) to a junior high (7-9) that year. At a time when self-definitions and role-definitions are changing and the youngster begins to shed the identity of child

and assume the new identity of teenager, children seem to fare less well if they are faced with a major alteration of environmental-type, that is, a major environmental discontinuity.[1]

The question for this analysis is whether this change of environment is more detrimental for some types of children than for others. Can we predict from factors known about the child in sixth grade which children will react more favorably to which types of school? Which children are more and less ready for sudden shift into a relatively impersonal, anonymous setting?

In this paper, we shall concentrate on a set of factors that would be presumed to render the sixth grade child more vulnerable with respect to his or her self-picture. We shall ask, whether the child who is already "vulnerable" in sixth grade responds more favorably the next year to a particular school type, in terms of self-esteem. Our prediction is that children already vulnerable in sixth grade will not be ready for the challenge of the new junior high school. If they enter junior high, they will show more negative changes in self-esteem than equally vulnerable children who remain in the same school in seventh grade. That is, the children who have not mastered or excelled in the tasks of childhood will be less ready for a sudden change of environmental type.

METHOD

Sample

The present study was conducted within the Milwaukee public school system from 1974 to 1976. Seven hundred and ninety-eight school children from 18 elementary schools were followed from Grade 6 to 7. These children were interviewed privately by trained survey interviewers, once in sixth grade and a year later in seventh grade. In addition, each student went through a brief session with a registered nurse to establish his or her level of physical development once each year.

Parental permission was solicited from all sixth graders in the sampled schools in Milwaukee and was secured from 82% of the original population; 86% of these

students remained in the school system for the two years of the longitudinal study. There were three main populations of schools from which we sampled: (1) eighth grade-top schools (K-8) which involved no change of school for the child in seventh grade, (2) sixth grade-top schools (K-6) with social characteristics similar to the eighth grade-top schools -- in particular, they were predominately white schools, and (3) the remaining sixth grade-top schools (K-6) which were heavily black and thus not comparable to the K-8 schools. Schools that were heavily Spanish-speaking in composition were excluded from all three populations. All seven K-8 schools were asked to participate with only one school refusing. A stratified random sample of K-6 schools was chosen from each of the other two categories noted above. The stratification variables were the percent of minority students in the school and the size of the school. All together there were 18 schools included in the final sample: six K-8 schools, eight comparable K-6 schools, and four predominantly black K-6 schools.[2]

Two criteria were important in the evaluation of the sample design: First, did the sample of schools reflect the population from which they were drawn.[3] In fact, for each school-type the sample schools are very similar to the population of schools on a variety of variables: median family income, achievement scores, teacher's background, mean percentage of children who move in or out of the school, mean percentage of teachers with only a B.A., mean percentage of teachers with only one year experience. In addition, by weighting our sample to reflect the actual proportion of each type of school in the total population, we can estimate the extent to which a given characteristic would appear in the total population if the sample is representative. Such weighted estimates again turn out to be quite close to actual population proportions (see Blyth, 1977).

A second criterion in the evaluation of the sampling design involved the comparability of the six K-8 schools and the eight predominantly white K-6 schools. In order to claim that differences between children in supposedly comparable K-8

and K-6 schools reflect differential reactions to the school-types rather than some set of pre-existing differences, it is necessary to compare the two groups of schools for initial differences. The data show virtually no differences between the K-8 and comparable K-6 schools on the same wide variety of social characteristics mentioned above (see Blyth, 1977).

Within the schools sampled, all sixth grade students were invited to be interviewed, giving every student within each stratum of the sample an equal probability of being asked to participate. This analysis will focus on the 522 white school children in K-8 schools or comparable K-6 schools.[4]

Measures

Self-Esteem: The major dependent variable used in this analysis is seventh grade self-esteem. Self-esteem is defined here as an individual's global positive or negative attitude toward him or herself. In this usage the individual with high self-esteem considers her/himself to be a person of worth, though not necessarily superior to others. Low self-esteem, on the other hand, implies self-rejection, self-dissatisfaction, or self-contempt. Self-esteem is measured in sixth and seventh grade by the same six-item Guttman Scale constructed by Rosenberg and Simmons. (See Rosenberg and Simmons, 1972 and Simmons, Rosenberg, and Rosenberg, 1973 for a discussion of the validity of this scale). In the present Milwaukee study, seventh grade Reproducibility is .930, Scalability is .771 and Percent Improvement is .237 over a Minimum Marginal Reproducibility of .693. In the earlier studies, this measure was shown to correlate with the widely-used Rosenberg self-esteem scale (Gamma = .61), but to be more appropriate for use with younger children (See Rosenberg, 1965; Wylie, 1974; and Wells and Marwell, 1976).

Vulnerability: In childhood, children can rank themselves on a variety of key characteristics. The independent variables in this study involve a number of such characteristics or qualities in sixth grade. Based on earlier research (Rosenberg, 1965, 1979; Rosenberg and Simmons, 1972; Simmons et al., 1973), these qualities are ones that are presumed to be important to children's self-esteem:

perceived peer popularity, academic success, athletic success, perceived good looks, and level of parental approval. For each of these characteristics at least one separate vulnerability indicator was created, and the resulting data were dichotomized to contrast so-called "vulnerable" and "less vulnerable" sixth-grade children along that dimension. That is, children were defined as already vulnerable in sixth grade if at that time they perceived themselves as unpopular, if their school performance was poor, if they perceived their looks unfavorably, if they perceived their athletic ability unfavorably, or if they believed their parents didn't have a high opinion of them. As shall be explained further below, our effort will be to see if children who were already vulnerable in each of these areas in sixth grade experienced more negative changes in self-esteem in seventh grade than their peers, and if they reacted less favorably to the change into junior high school.

Vulnerability along any one of these key dimensions was thought to be detrimental in itself for the self-picture. Thus, since we are not assuming that any given child has to be vulnerable in more than one dimension for effects to occur, we chose not to create a Cummulative score of vulnerability. Furthermore, there is no reason intuitively to believe that a low ranking along more than one dimension makes a child more vulnerable than a low ranking on only one dimension. Therefore, each vulnerability variable has been analyzed separately.

In dichotomizing the vulnerability variables or indicators, our strategy was to isolate those children who scored particularly unfavorably and then oppose them to the bulk of the students. Thus, cutting points were selected which would identify, for each variable, 20 to 30 percent of the children as vulnerable. The actual percentages classified as vulnerable for each of the variables ranges between 10.4% for "Happiness about Looks" and 34.9% for "Grade Point Average". In most cases, around 25 percent of the children were classified as vulnerable along each of the variables considered.

A total of eight indicators were considered for analysis out of which six are listed in Figure 2A and Figure 2B. Two indicators ("Self-Rating of Looks" and "Rating of Intelligence") had to be dropped from the analysis because they failed to meet the assumption of homogeneity in regression slopes demanded by the Analysis of Covariance used here. (See discussion below of Analysis of Covariance). Both of these indicators, however, tap dimensions already covered by the remaining indicators in the analysis.

All but two of the variables considered here ("Achievement Test Scores" and "Grade Point Average") correlated significantly ($p < .01$) and in a negative direction with sixth grade Self-Esteem and/or sixth grade Depression scores. Except for "Grade Point Average" and "Achievement Test Score" (Iowa Test of Basic Skills), which were secured from central records, all other vulnerability indicators were based on multiple-choice self-report items. One variable "Student's view of how highly parents think of him/her" is a composite score of three multiple choice self-report items.[5]

Measurement of Change

In this study, not only is the absolute level of the dependent variable of self-esteem important, but also the extent to which it changes between sixth and seventh grade. We wish to be able to determine whether there are gains or losses in the dependent variable over the two years and whether different sub-groups of children vary in the direction or magnitude of change. While it is possible to compute a simple gain score subtracting the sixth grade self-esteem score from the seventh grade self-esteem score, special analytical procedures must be followed if such a gain score is to be meaningful. Specifically, it is necessary to control or adjust for the initial sixth grade score. Otherwise, in the case of self-esteem, children with initially low self-esteem will have more room for improvement, while children with high self-esteem in the sixth grade will have more room on the scale to move downward (see Bohrnstedt, 1969).

To adjust for these ceiling and floor effects, an Analysis of Covariance procedure was used in which the sixth grade value of the dependent variable (the "Time 1 Self-Esteem score") was the covariate or continuous control variable and independent variables were "effect coded" and treated as dummy variables in a regression framework. With this method it is possible to compare differences between sub-groups in direction and magnitude of adjusted mean change, that is, change controlling or adjusting for the sixth grade score on the dependent variable. Thus, children who are vulnerable in sixth grade in regard to their perceived popularity can be compared to those less vulnerable in the two different school types, in terms of adjusted change in self-esteem. The actual or adjusted mean change scores for each sub-group can be derived either from the regression equations or more expeditiously from the Multiple Classification Analysis program of SPSS. (See Simmons et al., In Process, for more detail concerning the derivations).

An alternative method would be to do an Analysis of Covariance using the Time 2 or seventh grade value of self-esteem as the dependent variable and include in the analysis the Time 1 or sixth grade value as the covariate along with the independent variables. That is, the dependent variable would be the Time 2 score rather than the raw gain score. In both cases, the Time 1 variable would be controlled, and in both we could determine whether the effects of the independent variables were statistically significant. We prefer the adjusted change scores because this method allows for easier interpretation and communication of findings. In addition to determining whether the independent variables have statistically significant effects, differences among sub-groups in direction and degree of change can be easily noted because we are able to compare the adjusted mean change scores directly. Furthermore, we have proved (Simmons et al., In Process) that use of these adjusted mean change scores does not doubly adjust for differences at Time 1 but that in its statistical conclusions this procedure is identical to an Analysis of Covariance with the Time 2 score (not the raw change score) as the dependent variable (See Bock, 1975:505).

In particular, it can be proved that the unstandardized regression coefficients attached to the main independent variables in each of the two procedure is identical as are their tests of significance. The only major difference between the two procedures involves the unstandardized regression coefficient for the main effects of the covariate or Time 1 score. This effect, however, is of little interest to the present analysis.

It should also be noted that analysis of covariance can only be performed when there is no significant interaction of the independent variables and the covariate. All analyses presented in this paper were first tested to make certain this assumption was not violated.

As noted above, a separate analysis will be presented for each of the six vulnerability variables. For example, there is an analysis using "Grade Point Average," sex, and school type as independent variables and an adjusted self-esteem gain score as the dependent variable (with sixth grade self-esteem as the covariate or control variable); and there is a parallel analysis using "Self-Rating of Popularity", sex and school type as independent variables. In each case, adjusted mean change scores between groups will be compared and the statistical significance of main effects and interactions between independent variables will be tested. In addition, the consistency of effects across the six vulnerability variables will be tested.

FINDINGS

As background against which to understand subsequent analyses, Table 1 and Figure 1 show the impact of sex and school type by themselves. Table 1 shows that overall in seventh grade, males have higher self-esteem than females; and females in K-8 schools have higher self-esteem than females in junior high school; whereas school type does not appear to affect males. Similarly, in Figure 1 we see that all children except females in junior high school show some improvement in self-esteem between sixth and seventh grade when their initial level of sixth grade self-esteem is controlled for, but females entering junior high school demonstrate

TABLE 1

Self-Esteem by Sex by School Type

(Whites Only)

Seventh Grade Self-Esteem	K - 8 Schools		Comparable Junior High Schools		Total	
	Males	Females	Males	Females	Males	Females
low	25%	35%	23%	45%	24%	41%
medium	33%	32%	38%	30%	36%	31%
high	42%	33%	39%	25%	40%	28%
	100% (111)	100% (93)	100% (168)	100% (148)	100% (279)	100% (241)
			$X^2 = 17.74$		$X^2 = 18.29$	
			$p < .001$		$p < .001$	

REGRESSION ANALYSIS	B (Standardized)	b (Unstandardized)	Significance p of F	Significance of Increase in R^2 when interaction added to equation
Independent 2-Variable Equation				
Sex (Male= -1; Female= +1)	-.20	-.69	<.001	
School Type (K-8= -1; Jr. Hi= +1)	-.06	-.21	----	
Intercept Constant		3.87		
2-Independent Variables Plus Interaction				$p < .05$
Sex	-.09	-.31	----	
School Type	-.02	.80	----	
Sex by School Type	-.16	-.62	.04	
Intercept Constant		3.69		

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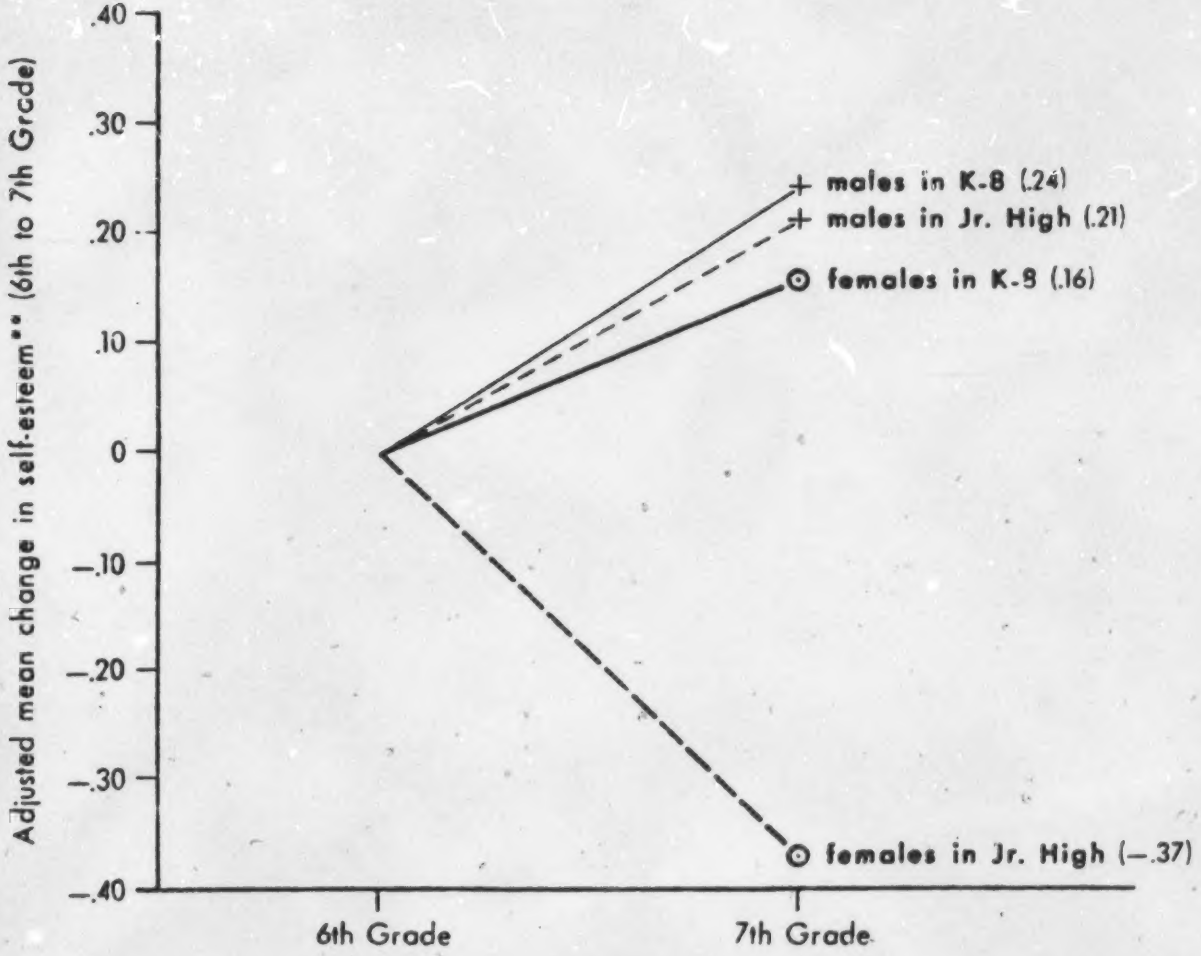
Figure 1 ADJUSTED CHANGES IN SELF-ESTEEM BETWEEN 6TH AND 7TH GRADE BY SEX AND SCHOOL TYPE



FOOTNOTE FOR FIGURE 1

Dependent Variable: Self-Esteem Change

** Analysis of Covariance in Regression Format (one equation including interaction) (N = 518)	B (Standardized)	b (Unstandardized)	a (Constant)	Significance p of F	Significance of Increase in R^2 when Interaction added to Equation
Sources of Variation					
Covariate - Sixth Grade			1.75		
Self-Esteem (Mean = 3.38)	-.50	-.50		.001	
Main Effect					
Sex	-.10	-.16		.004	
School Type	-.08	-.14		.035	
Interaction					p = .06
School Type by Sex Interaction	-.07	-.12		.061	
Intercept Constant		1.75			

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a significant drop in self-esteem. Thus overall, junior high schools appear to be disadvantageous for girls but not for boys.

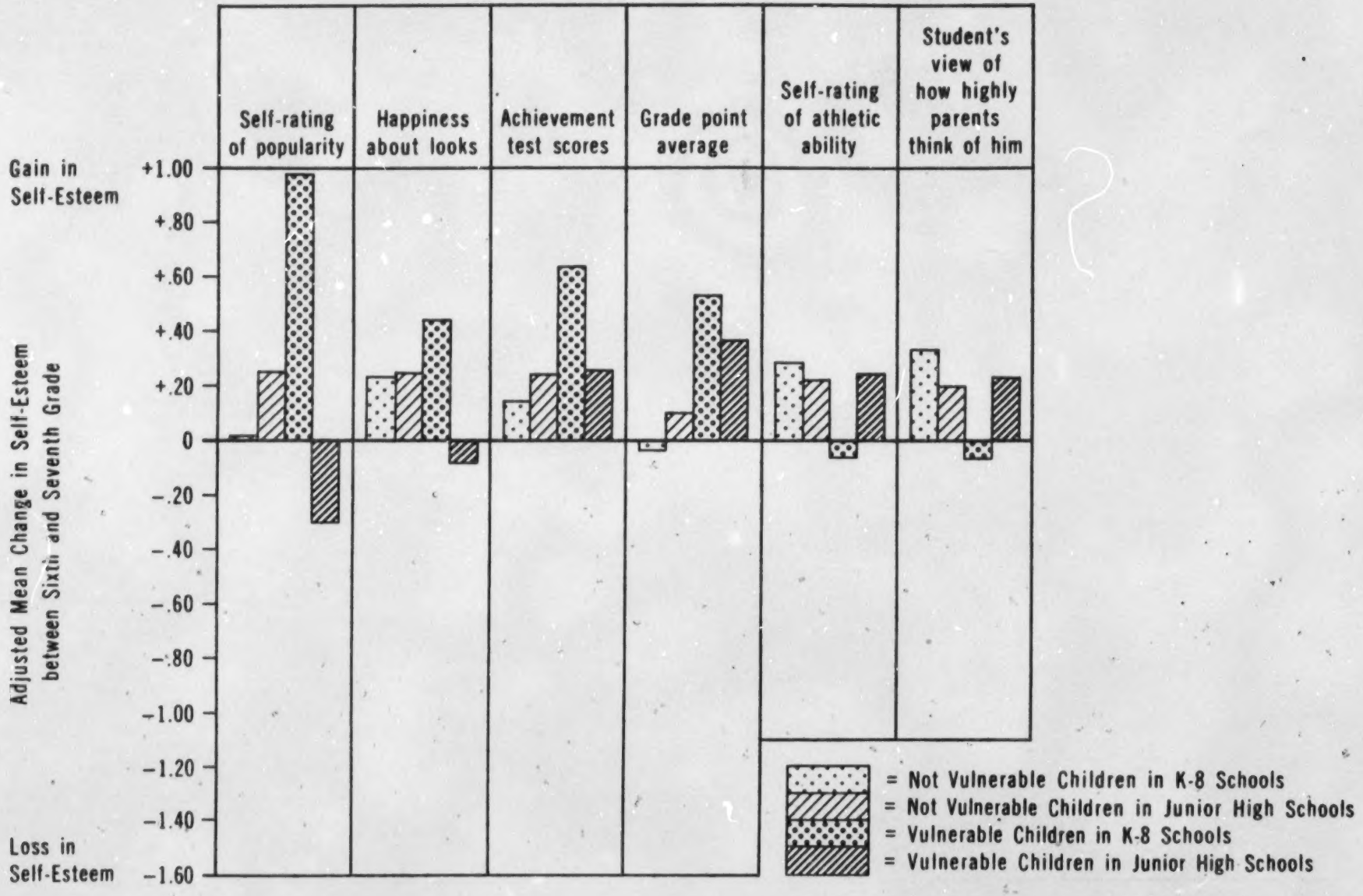
Vulnerability Factors

When we add the vulnerability variables does this picture change? How do children who are already at a disadvantage in the sixth grade react to change vs. stability in their school environment the next year? Figures 2A for boys and 2B for girls show the effects of each of the six different indicators of vulnerability and of school type upon the mean adjusted change in self-esteem.[6] For boys and girls on each of the six vulnerability variables, there is a different shaded bar indicating the mean adjusted positive or negative change in self-esteem experienced by one of the four types of children: (1) the less vulnerable child in K-8 school; (2) the less vulnerable child in a junior high school; (3) the vulnerable child in K-8 school; and (4) the vulnerable child in a junior high school. Thus, comparisons can be made between these four types of children on each of the six separate indicators of vulnerability.

The following results are indicated. First, comparing each bar shown in Figure 2A with its corresponding bar in Figure 2B, we see that for each school type and level of vulnerability, boys almost always experience more positive change in self-esteem between sixth and seventh grade than do girls -- that is, the bars for boys are almost always higher than those for girls. The only exceptions involve less vulnerable children in K-8 schools. That is, girls always react more disadvantageously than boys unless they started out "less vulnerable" and were able to remain in a K-8 school.

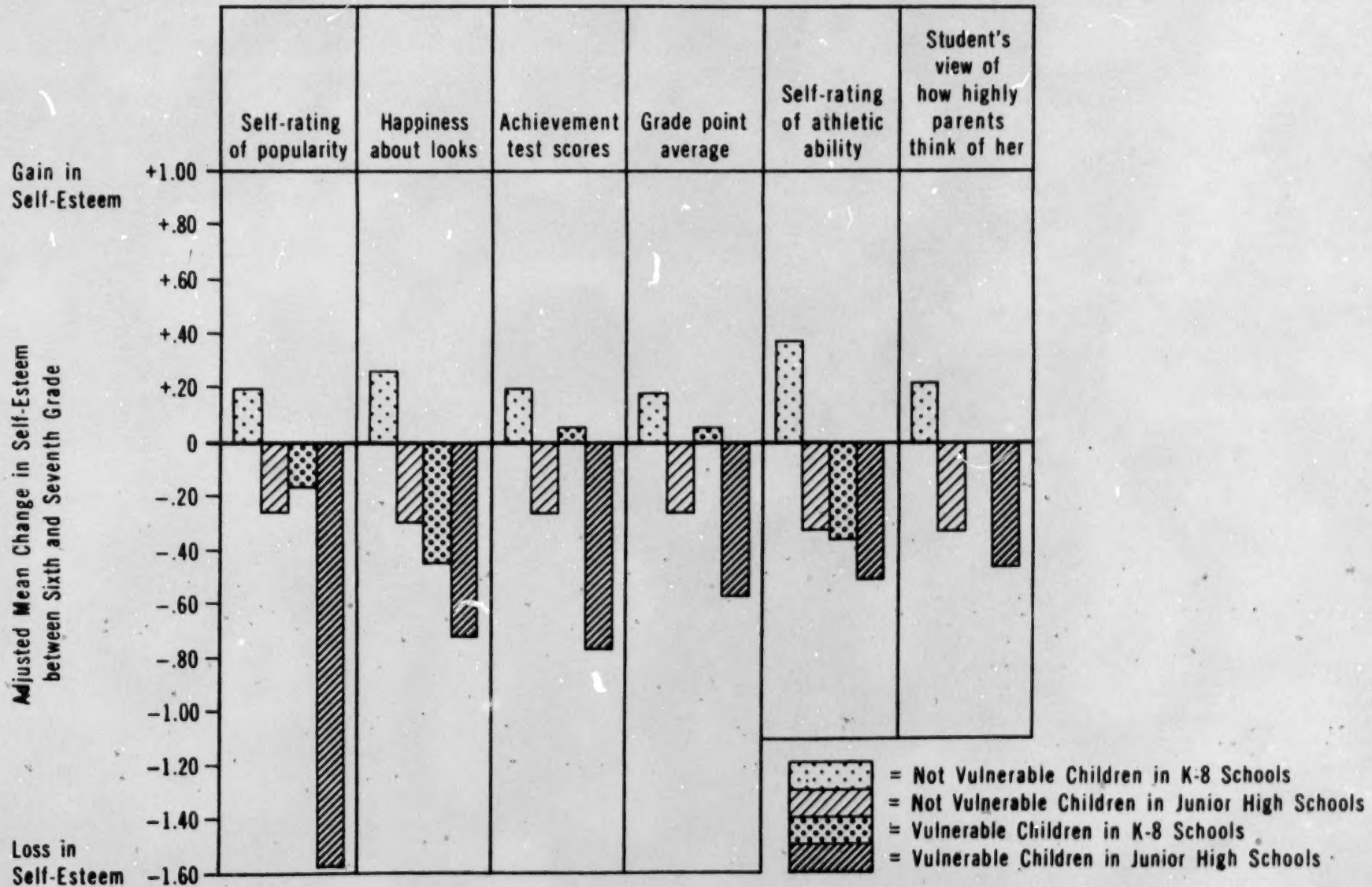
Secondly, we will look at boys and girls separately. Figure 2B concentrates on girls and shows that junior high girls experience more negative change in self-esteem than do K-8 girls. (Figure 2B: Compare the 1st and 2nd bars; compare the 3rd and 4th bars). In addition, among the girls, those within the same school type show more negative changes in seventh grade self-esteem if they were already

Figure 2A: Change in Self-Esteem* between 6th and 7th Grade in Different School Types for Boys Identified as Vulnerable or Less Vulnerable on Six Factors Leading to Vulnerability in 6th Grade.



*This change score is adjusted for level of sixth grade self-esteem (a covariate) such that, effectively, all children are treated as starting at the same point.

Figure 2B: Change in Self-Esteem* between 6th and 7th Grade in Different School Types for Girls Identified as Vulnerable or Less Vulnerable on Six Factors Leading to Vulnerability in 6th Grade.



*This change score is adjusted for level of sixth grade self-esteem (a covariate) such that, effectively, all children are treated as starting at the same point.

particularly vulnerable on any one of these six indicators of vulnerability in sixth grade (Figure 2B: Compare in each case bar 1 to bar 3 and bar 2 to bar 4). For boys, neither school type nor prior vulnerability appear to exert any consistent effect.

Finally, when these factors are looked at jointly, we see that the girls who were vulnerable in sixth grade on any of these indicators and then attended junior high school show the most negative changes in self-esteem of any group. That is, bar 4 in Figure 2B in every case is lower, frequently by a considerable amount, than are the other bars either for girls or boys. Among boys, on the other hand, no one group appears consistently at a greater disadvantage than the others.

To determine the significance of these results, two types of statistical analyses were done: (1) a Wilcoxon Matched Pairs Signed Ranks test which treats each of the six indicators of vulnerability as an individual test of a hypothesis, and allows us to see if the effects reported above are consistent across the six indicators, or if the null hypothesis of independent or inconsistent effects is supported. (See Table 2); (2) a separate analysis of covariance in regression format for each indicator which allows us to determine the significance of each of the three main effects and their interactions (Table 3). The results of the Wilcoxon test (Table 2) show that when all children are considered together (1) girls moving into seventh grade consistently show more negative (or less positive) changes in self-esteem across indicators than do boys ($p < .01$); (2) "vulnerable" children consistently indicate more negative (or less positive) changes in self-esteem than "not vulnerable" children across indicators ($p < .05$); and (3) junior high school children in contrast to K-8 students consistently show more negative changes in self-esteem ($p < .05$). However, when boys and girls are examined separately, no consistent significant effects are found for school type or prior vulnerability for boys. For girls, on the other hand, junior high school and prior vulnerability are significantly consistent in their negative impact upon changing self-esteem

TABLE 2

Wilcoxon Matched-Pairs Signed Ranks Tests for Vulnerability, School Type and the Vulnerability by School Type Interaction for Boys and Girls

	Predicted Direction of Difference: Group Expected to Show More Positive Change in Self-Esteem	Difference Between Adjusted Mean Change Scores of Indicated Sub-Groups (a positive score indicates support for the prediction.)*							
		Self-Rating of Popularity	Happy with Looks	Achievement Test Scores	Grade Point Average	Self-Rating of Athletic Ability	Student's View of How Highly Parents Think of Him/Her	T	Probability (One-Tailed Test)
AVERAGE ACROSS VULNERABILITY AND SCHOOL TYPE									
Boys vs. Girls	Boys	.69 (6)	.52 (4.5)	.52 (4.5)	.41 (3)	.38 (2)	.33 (1)	0	S < .01
AVERAGE ACROSS SEX AND SCHOOL TYPE									
Not Vulnerable vs. Vulnerable	Not Vulnerable	.32 (5.5)	.30 (4)	.03 (1)	-.10 (2)	.32 (5.5)	.18 (3)	2	S < .05
AVERAGE ACROSS SEX AND VULNERABILITY									
K-8 vs. Junior High	K-8	.73 (6)	.33 (4)	.40 (5)	.28 (3)	.16 (1)	.21 (2)	0	S < .01
BOYS ONLY:									
Effects of School Type: K-8 vs. Junior High									
For Vulnerable Boys	K-8	1.27 (6)	.49 (5)	.39 (4)	.15 (1)	-.30 (3)	-.29 (2)	5	S > .10
For Not Vulnerable Boys	K-8	-.24 (6)	-.01 (1)	-.10 (3)	-.12 (4.5)	.08 (2)	.12 (4.5)	14.5	S > .10
Effects of Vulnerability: Not Vulnerable vs. Vulnerable									
For K-8 Boys	Not Vulnerable	-.96 (6)	-.22 (1)	-.50 (4)	-.55 (5)	.35 (2)	.38 (3)	16	S > .10
For Junior High Boys	Not Vulnerable	.55 (6)	.28 (4.5)	-.01 (1)	-.28 (4.5)	-.03 (2.5)	-.03 (2.5)	10.5	S > .10
Interaction of School Type and Vulnerability**	Among Vulnerable Children School Type Difference will be Greater than among Not Vulnerable Children	1.51 (6)	.50 (5)	.49 (4)	.27 (1)	.38 (2)	.41 (3)	5	S > .10

TABLE 2 (continued)

Wilcoxon Matched-Pairs Signed Ranks Tests for Vulnerability, School Type and the Vulnerability by School Type Interaction for Boys and Girls

	Predicted Direction of Difference: Group Expected to Show More Positive Change in Self-Esteem	Difference Between Adjusted Mean Change Scores of Indicated Sub-Groups (a positive score indicates support for the prediction.)*							
		Self-Rating of Popularity	Happy With Looks	Achievement Test Scores	Grade Point Average	Self-Rating of Athletic Ability	Student's View of How Highly Parents Think of Him/Her	T	Probability (One-Tailed Test)
GIRLS ONLY:									
Effects of School Type: K-8 vs. Junior High									
For Vulnerable Girls	K-8	1.43 (6)	.29 (2)	.84 (5)	.64 (4)	.14 (1)	.48 (3)	0	S < .01
For Not Vulnerable Girls	K-8	.45 (1)	.55 (5)	.47 (3)	.46 (2)	.70 (6)	.53 (4)	0	S < .01
Effects of Vulnerability: Not Vulnerable vs. Vulnerable									
For K-8 Girls	Not Vulnerable	.35 (4)	.69 (5)	.13 (1.5)	.13 (1.5)	.74 (6)	.20 (3)	0	S < .01
For Junior High Girls	Not Vulnerable	1.33 (6)	.43 (4)	.50 (5)	.31 (3)	.18 (2)	.15 (1)	0	S < .01
Interaction of School Type and Vulnerability**	Among Vulnerable Children School Type Differences will be Greater than among Not Vulnerable Children	.98 (6)	-.26 (3)	.37 (4)	.18 (2)	-.56 (5)	-.05 (1)	9	S > .10

* For each of the 6 indicators in a row, the top number represents the difference between the mean change scores of the relevant sub-groups. These differences are then ranked according to absolute size from 1 to 6 for each row. The ranking is shown in parentheses below the figure indicating the size of the difference. To compute "T", we sum the rank scores that are contrary to prediction and compare "T" to the Table of Critical Values to obtain levels of significance (Siegel, 1956; Kraft and Van Eeden, 1968). Differences that are contrary to prediction are preceded by a minus sign.

** These difference scores were obtained by subtracting the difference between K-8 and junior high school groups among Vulnerable children from the difference between K-8 and junior high school groups among Not Vulnerable children.

TABLE 3

Change in Self-Esteem by Six Indicators of Sixth Grade Vulnerability

Unstandardized Regression Coefficients for Main Effects* and Statistically Significant Interactions**

(Whites in Comparable School Types)

	Self-Rating of Popularity	Happy With Looks	Achievement Test Scores	Grade Point Average	Self-Rating of Athletic Ability	Student's View of How Highly Parents Think of Him/Her
Main Effects:						
6th Grade Self-Esteem	-.506^{+++}	-.509^{+++}	-.507^{+++}	-.494^{+++}	-.527^{+++}	-.505^{+++}
School Type	-.376^{+++}	-.138^{++}	-.138^{++}	-.124^{+}	-.153^{++}	-.136^{++}
Sex	-.349^{+++}	-.151^{++}	-.268^{+++}	-.210^{+++}	-.135^{++}	-.166^{+++}
Vulnerability	-.152	-.178^{+}	-.030	-.032	-.287^{+++}	-.072
Two-Way Interactions:						
School Type by Sex Interaction	-.157^{++}	-.120^{+}	-.133^{++}	-.122^{+}	-.112^{+}	-.123^{+}
School Type by Vulnerability Interaction	-.324^{+++}	ns	ns	ns	ns	ns
Sex by Vulnerability Interaction	-.261^{+++}	ns	-.147^{+}	-.161^{++}	ns	ns
Three-Way Interaction:						
School Type by Sex by Vulnerability Interaction	ns	ns	ns	ns	ns	ns

+ P < .10
++ p < .05
+++ p < .01

[Footnotes continued on next page]

TABLE 3 (continued)

* The regression coefficients and significance levels shown here for the covariate of sixth grade self-esteem cannot be directly interpreted since they are not invariant when change scores vs. Time 2 scores are used as the dependent variable.

** The regression coefficients and significance levels reported here were computed from the most parsimonious regression model for each indicator of vulnerability. The decision for inclusion of interaction terms was reached through a two-step, backward solution. First, the significance of adding the 3-way interaction term to a model including all other factors and interactions was tested. If the increment in R-square added by this term was significant, then the analysis stopped and significance levels for all effects in the model were simultaneously computed. If this increment was not significant, then the 3-way interaction term was dropped from the analysis and the unique effects of each of the 2-way interaction terms was tested. In this second step, each 2-way interaction term was added to a model which included all main effects and the other remaining 2-way interactions. If the increment in R-square added by this particular 2-way interaction was significant, then the interaction term would continue to be used in testing for the effects of the remaining 2-way interaction terms but was not included when levels of statistical significance were recomputed for the final model. It should be noted that whenever an interaction effect was found to be statistically significant, the main effects for the variables involved in the interaction are no longer directly interpretable (although the direction of their effects indicated by the unstandardized regression coefficients is informative).

($p < .01$). Yet, there is no significant school-type vulnerability interaction for girls. Thus, the effects of these two variables are additive for girls.

The regression analysis (Table 3) for each indicator also supports the above conclusions. In specific we should note there is a significant sex by school type interaction for every indicator due to the fact that for every vulnerability-type, girls unlike boys, respond more negatively to junior high school than to K-8 schools. In all but one case, prior vulnerability either is a significant disadvantage itself for changing self-esteem ("Happiness with Looks," "Athletic Ability") or there is a significant interaction between sex and prior vulnerability reflecting the finding that vulnerable girls, but not boys, react particularly negatively in terms of self-esteem in seventh grade ("Peer Popularity," "Achievement Scores," GPA). Once again, with one exception, there are no significant interactions between school type and vulnerability or between sex, school type, and vulnerability. We can conclude that the negative impact of junior high school and prior vulnerability are additive for girls rather than interactive. Nevertheless, the result of this additive process is that girls who enter junior high school having failed in some significant way the year before are the group most in jeopardy in regard to self-esteem.

CONCLUSION

The life-cycle necessarily presents individuals with several major role-transitions, some of which coincide with periods of significant physiological change. The movement into early adolescence is one such role-transition and this study has explored the impact of this role-transition upon a key aspect of mental health, that is, self-esteem (see Murphy, 1947). With repeated survey interviews, five-hundred twenty-two white school children were followed from sixth into seventh grade in comparable schools.

The main findings from this study document the importance of social structure and social context for mental health. That is, in terms of their self-esteem, white adolescent girls who have entered the new environment of junior high school

appear to be at a disadvantage in comparison both to boys in general and also to those girls who do not have to change schools in seventh grade. When the entrance into adolescence is sudden and discontinuous (see Benedict, 1938), girls appear to have greater difficulty in adjustment.

Prior vulnerability renders the child less capable of making this transition without damage to the self-esteem. The child, particularly the adolescent girl who in some significant way has not succeeded in her first environment, finds the next context more stressful in terms of the self-picture. The girl who both has to make a radical environmental change from an elementary into a junior high school and who has not succeeded the year before is the child most at risk.

Apparently the change from the role of child to that of early adolescent is more stressful for girls than boys,[7] and is particularly difficult if it coincides with a major environmental discontinuity and if the girl has not mastered or excelled in the tasks of childhood.

FOOTNOTES

1. See Simmons et al., In Process and Blyth et al., 1978 for an analysis of the conjoint roles of puberty, school-type and social expectations upon the children's self-esteem.
2. One of the original comparable K-6 schools refused and a new school was redrawn. One original black K-6 school refused as well as one junior high into which black K-6 schools fed. New schools were redrawn.
3. In order to help assure such comparability, a technique of constrained randomization was utilized. For more detail on this technique, see Blyth, 1977.
4. There are not enough blacks in either K-8 or comparable K-6 schools to analyze separately. See Simmons et al., 1978 for analysis of the self-esteem of black vs. white children in the sample.
5. The exact questions used for each of these variables are as follows (with responses indicating vulnerability marked with asterisks): (1) Self-Rating of Popularity - "Would you say that the kids in your class think of you as... a wonderful person, a pretty nice person, *a little bit of a nice person, or *not such a nice person?"; (2) Happy with Looks - "First, how happy are you with how good-looking you are? Are you...very happy, somewhat happy, *not very happy, or *not at all happy with how good-looking you are?"; (3) Achievement Test Scores - Average of scores from Iowa Tests of Basic Skills (The lowest ranking third of children are classified as vulnerable); (4) Grade Point Average - The child's actual sixth grade GPA obtained from school records (Less than 2.00 is classified as vulnerable); (5) Self-Rating of Athletic Ability - "How good at sports are you? Are you...very good at sports, pretty good at sports, *not very good at sports, or *not at all good at sports?"; and (6) Student's View of How Highly Parents Think of Him/Her - A dichotomized score constructed from three items (if child answered according to any one of the starred responses they were classified as vulnerable): "Would you say that your mother thinks of

you as...a wonderful person, a pretty nice person, *a little bit of a nice person, or *not such a nice person?"; "Would you say that your father thinks of you as...a wonderful person, a pretty nice person, *a little bit of a nice person, or *not such a nice person?"; and "Let's pretend your parents wanted to tell someone all about you. What would they say? What type of person would they say you were?" (Open-ended responses were coded as all positive, mixed positive and neutral, *all neutral, *mixed neutral and negative, or *all negative).

6. For each vulnerability variable, adjusted mean change scores for the four groups of boys and four groups of girls were obtained from a single eight group analysis of covariance with sixth grade self-esteem as the covariate.
7. See Simmons et al. (In Process) and Douvan and Adelson (1966) for discussions concerning reasons for this difference.

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